

TECHNICAL ANALYSIS

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TECHNICAL ANALYSIS

I. MODULE OBJECTIVES

This manual will serve as a tool for the project engineer charged with the technical analysis of an offeror's proposal. NASA GRC technical personnel performed such analysis as a member of the acquisition support team. This document is not intended to be a "comprehensive technical evaluation manual" and falls far short of addressing each situation that may be encountered in the field. Supplement this manual with discussions with procurement personnel at your Center and NASA Headquarters, and other sources, such as the Cost, Pricing, and Audit page in the NASA Procurement Library at <http://ec.msfc.nasa.gov/hq/library/price.htm>, and the Contract Pricing Reference Guides found at <http://www.gsa.gov/fai>. In this manual, you will be introduced to what a technical analysis of an offeror's technical and cost volume is, when and why it is performed, and how it is used. It is intended to be a desk reference manual providing guidance in the performance of a technical analysis.

This manual is designed to systematically assist the technical evaluator in performing a technical analysis and formulate conclusions about the offeror's proposed types and quantities in their technical and cost volumes of their proposals. The manual is purposefully held to its current size to be user friendly and to encourage its use as an overview reference document.

Direct any suggested improvements to this document to NASA, GRC, Procurement Division (0610).

II. WHAT IS A TECHNICAL ANALYSIS AND WHY IS IT PERFORMED

A. Cost Realism

What:

FAR 15.404-1(d)(1)

Cost realism analysis is the process of independently reviewing and evaluating specific elements of each offeror's proposed cost estimate to determine whether the estimated proposed cost elements:

- Are realistic for the work to be performed;
- Reflect a clear understanding of contract requirements; and
- Are consistent with the unique methods of performances and materials described in the offeror's technical proposal.

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Why:

The purpose of a cost realism analysis is to determine what, in the Government's view, it would realistically cost the Government for the offeror to perform the statement of work, given the offeror's own technical and management approach and utilization of proposed personnel. It involves a structured review of the cost proposal to assess the:

- The offeror's understanding of the requirements
- The consistency of costs relative to the offeror's technical and management proposals, and
- The degree to which the costs included in the cost/price proposal accurately reflects the level of effort associated with the technical proposal.

Also, one of the significant factors in a "best value" procurement process for which a risk assessment should be made is "Cost Realism." Therefore, an evaluation of cost realism, through the process of a cost realism analysis, should be made prior to the award of any cost reimbursable contract awarded on the basis of best value. Cost Realism analysis will allow for a comparison of the Government's best estimate for each offeror's proposal for selection of the best value offer.

B. Probable Cost

What:

FAR 15.404-1(d)(2)(i)

Probable cost is the Government's best estimate of the cost that is most likely to result from an offeror's proposal. The probable cost is determined by adjusting each offeror's proposed cost, and fee when appropriate, to reflect any additions or reductions in cost elements to realistic levels based on the results of the cost realism analysis.

Whenever a probable cost estimate is developed the following points should be considered:

- As information required to evaluate the realism of an offeror's cost/price estimate is collected, the information required to develop the Government's estimate of the most probable contract cost is also collected.
- In developing the Government's probable cost, the portion of the offeror's estimate that appears realistic should be accepted and the portion of the estimate that is believed to be unrealistic should be adjusted. For example, the proposed labor hours may be accepted, based on a technical analysis, while the labor rate(s) are adjusted based on an audit recommendation. Adjustments may increase or decrease cost estimates.

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- Relevant estimating tools and techniques should be used. The Government's probable cost should be clearly documented with the rationale for any adjustment provided.
- Each probable cost estimate must consider the unique characteristics of the offeror and its technical and management approach.

Why:

The Government's probable cost estimate is used by the selection official in the source selection process as a tool for determining the most advantageous award for the Government. In many cases that will be the award that represents the Best Value for the Government. In addition, the probable cost is to be used for purposes of evaluation to determine the best value.

C. Independent Government Estimate

What:

It is an estimate that the Government develops prior to the submission of proposals from offerors for what it believes it will cost to perform the work described in the solicitation. This estimate is not specific to any one proposal, therefore, it should only be used as a guide in performing the evaluation of the specific offeror's proposal. The independent Government estimate is different from the Government's budgetary or funding profile.

Why:

The independent Government estimate is used as a baseline in determining whether an offeror's proposed price is fair and reasonable.

D. Technical Analysis

What:

FAR 15.404-1(e)(3)

It is the contracting officer's use of personnel having specialized knowledge, skills, experience, or capability in engineering, science, or management to analyze the proposed types and quantities of materials, labor, processes, special tooling, facilities, the reasonableness of scrap and spoilage, and other associated factors set forth in the proposal(s) in order to determine the need for and reasonableness of the proposed resources, assuming reasonable economy and efficiency. The analysis should include any other data that may be pertinent to an assessment of the offeror's ability to accomplish the technical requirements or to the cost or price analysis of the service or product.

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Why:

A technical analysis is performed to determine the realism of the proposed types and quantities of resources (hours, materials, etc.) required to perform the work in the manner proposed by the offeror. The results of the technical analysis are used to adjust the proposed types and quantities used to develop the Government's probable cost.

E. Cost Analysis

What:

FAR 15.404-1(c)

Cost analysis is the review and evaluation of the separate cost elements and profit/fee in an offeror's or contractor's proposal (including cost or pricing data or information other than cost or pricing data), and the application of judgment to determine how well the proposed costs represent what the cost of the contract should be, assuming reasonable economy and efficiency.

Why:

Cost Analysis is an element of Cost Realism whose purpose is to ensure that the Government awards a contract at a fair and reasonable price. The results of the Cost Analysis are used to adjust the offeror's proposed rates and factors to develop the Government's probable cost.

F. Buying-in

What:

FAR 3.501-1

Buying-in is the submission of an offer below the offeror's anticipated costs, expecting to:

- Increase the contract amount after award (e.g. through unnecessary or excessively priced change orders) or
- Receive follow-on contracts at artificially high prices to recover losses incurred on the buy-in contract.

The Government bears the risk associated with buy-ins under cost reimbursement contracts. The risks to the Government from buy-ins arise out of cost overruns on cost reimbursement contracts, accelerated utilization of labor hours, poor contract performance and decreased competition. A potential outcome of buying-in is that contractors, which can afford to take contract losses for a period, will absorb the losses in order to remove competitors from the marketplace. After the competition is reduced, the Government may be forced to procure materials and services at higher prices in the future because fewer qualified bidders exist.

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Why:

During the initial contract period the Government may perceive some benefit from the lower price and believe that it results from competition. However, the reality is that, by advocating awards to buy-in proposals for a technically qualified low bidder that has not met the test of cost realism, the Government increases its exposure to the above risks and may reduce viable competition in the future. The Cost Realism Analysis and the Technical Analysis will determine if a buy-in has been proposed. Given this information the Government may decide to accept the risk of a buy-in proposal.

III. WHEN IS PERFORMANCE OF A TECHNICAL ANALYSIS APPROPRIATE

A. Negotiated Procurements

FAR 15.404-1(e)(3)

A technical analysis report is required for all negotiated procurements where cost proposals are submitted covering new requirements, contract change orders, or scheduled revisions.

B. Cost Reimbursement Contracts

FAR 15.404-1(d)(2)

Cost realism analyses and technical analyses shall be performed on all cost-reimbursement contracts to determine the probable cost of performance for each offeror. Because a cost-reimbursement contract guarantees the contractor will recover all allowable and allocable costs, the Government absorbs the risk of cost overruns. A cost-realism analysis minimizes the Government's risk by lending some predictability to the performance of the contract and the related costs to be incurred.

C. Time and Materials & Labor Hour Contracts

Cost realism generally is not mandatory for Time and Materials or Labor Hour contracts because the Government's liability is generally fixed, and the risk of increased cost escalation is on the contractor. The costs in these contracts are evaluated in a similar manner to fixed priced contracts except for the proposed materials cost element of T&M contracts. This cost element should be evaluated in a manner similar to that for a cost reimbursement contract. Technical analyses of the proposed materials should be performed to ensure the type and quantities of proposed materials are appropriate based on the methodology proposed by the offeror.

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IV. TECHNICAL ANALYSIS

A. Development of Solicitation Instructions

A determination needs to be made for each acquisition as to whether or not cost realism will be used. Generally, this should take place during acquisition planning with the necessary cost information requirements identified in the solicitation to included required disclosure for types and quantities of material, labor hours, labor skill mixes, travel, other direct costs. The cost information requirements can be established after the receipt of offers, but that will usually result in the acquisition being delayed while the offerors gather and submit the information that has been required. The solicitation must define how cost realism will be used in the source selection process.

If information other than cost or pricing data will be requested from the offerors, the information requested should be limited to that which is anticipated will actually be needed. For example, if the primary concern is about the realism of labor estimates, the information requirement should be limited to the labor rate, skills, mixes and hour estimates. In that situation, information concerning other cost elements should not be requested. Also, the solicitation should permit each offeror to determine the format for submission of the information, unless a specific format is needed to perform an efficient and effective analysis.

Offerors should only be required to submit the level of information that is necessary to perform the cost realism and technical analysis. If additional information is required, it should be obtained to the maximum degree possible from sources other than the offeror.

B. Role of Technical Analysis

Technical specialists and others familiar with specific contract requirements are typically the Government personnel best qualified to evaluate technical proposals. They can determine the need for and reasonableness of the proposed resources. The technical analysis should examine the types and quantities of the materials and labor proposed to determine whether they are appropriate for accomplishing the contract requirements. The technical analysis should also raise key questions about apparent inconsistencies between an offeror's technical and pricing proposals. For example, the technical proposal describes the type of work typically performed by a top engineer, but the cost proposal is based on using journeyman engineers. The role of the technical analysis should address whether the journeyman engineers are able to perform the required tasks in a timely, cost effective manner.

C. Objective of the Technical Analysis

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The technical analysis is intended to provide an assessment of the types (qualitative) and quantities (quantitative) of the direct charges estimated by the offeror as required to perform in accordance with their unique methodology and understanding of the statement of work. Direct charges include direct labor hours, skill mix, materials, travel, special tools, test equipment, computer support and other direct charges.

D. Technical Analysis and Contract Negotiations

Technical analysis reports are used to support contract negotiations. The reports must be “free standing” documenting the reasons why a particular quantitative position is established by the technical evaluator. The technical analysis report is vital to the contracting officer in their effort to reach agreement with the proposed contractor in executing a contract. The contracting officer’s negotiation plan must support his quantified position versus the contractor’s position with a clear logical and accurate argument supported by the technical analysis report.

E. Technical Analysis, Cost and Price Analysis

The technical analysis report is used as input to the cost and price analysis as well as the pre negotiation planning. Price Analysts will work with the project engineer in identifying and analyzing the content of the offeror’s price proposal versus the content of the technical proposal. Discrepancies between the technical and price proposals will be identified and used in the development of the probable cost.

V. SAMPLE TECHNICAL ANALYSIS REPORT AND FORM C-266

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Sample Technical Analysis Report
For Procurements over \$550,000

MEMORANDUM FOR RECORD

TO: _____/
(Code) (Contract Specialist)

FROM: _____/
(Code) (Project Engineer)

SUBJECT: Technical Analysis of _____
Company Proposal No. _____ in response to RFP Number _____,
under Contract Number _____

REF: Technical Analysis Request Dated _____

1. Background

To the extent applicable, discuss nature of procurement, variations from proposed work (SOW, WBS, specifications, deliverables), schedules, and unique features of the procurement.

2. Scope of Analysis

To the extent applicable, discuss extent of analysis, what was reviewed, what was not reviewed and why, nature and availability of supporting documentation, adequacy of supporting data, techniques, or approaches used in analysis such as use of historical costs, sampling, etc. and relative ability to analyze proposed costs.

3. Itemized Technical Analysis

For each major section of the SOW/WBS, identify the proposed and recommended resources, the proposal rationale, and the reasons for agreement or exception.

a. Material

- (1) Basis for Proposal. State the basis on which the contractor proposed the material such as historical bill of material, current quotes, recent purchase orders, plus escalation, etc.
- (2) Material Breakdown

Material	Contractor Proposed	GRC Minimum	GRC Objective	Reference
Task 1 (list items or groups of items of significance)	Record proposed quantities	GRC minimum quantities	GRC probable quantities	a. _____ b. _____ (as applicable)

Task 2, Task 3, etc. Use same format as for Task 1.

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- (3) Discussion. State the reasons for recommended positions identified to specific line items or classes of material. The reference column may be used to refer to discussion notes when changes are recommended in either quantity or quality of the materials. Comment on the adequacy of the prime contractor's evaluation of subcontract proposals.

b. Direct Labor

- (1) Basis for Proposal. State the basis on which the contractor proposed his labor hours such as historical hours, complexity factors, engineering judgment, standard hours, realization rates, learning curve, etc.

- (2) Labor Breakdown

Labor

Classifications	Proposed Hours	GRC Minimum	GRC Objective	Reference
Task 1	Record proposed	GRC	GRC	Notes
Engr.	Hours for each	minimum	probable	
Mfg.	Bid category	hours	hours	(as applicable)
Qual. A.	_____	_____	_____	
Total				
Task 2				
Engr.				
Mfg.				
Qual. A.	_____	_____	_____	
Total				
Summary				
Engr.				
Mfg.				
Qual. A.	_____	_____	_____	
Total	_____	_____	_____	

- (3) Discussion. State the reasons for recommended positions. Identify to appropriate task' and labor classification by using reference column. Qualitative differences may also be shown by reference notes.

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c. Travel

(1) Basis for Proposal. State the basis on which the contractor proposed his number and duration of trips such as historical data, number of vendors, engineering judgment, etc.

(2) Travel Breakdown

<u>Travel Destination/ Purpose</u>	<u>Proposed Man Trips</u>	<u>GRC Minimum</u>	<u>GRC Objective</u>	<u>Reference</u>
List Destinations applicable in groups by purpose and task	Record the proposed man trips	GRC minimum quantities	GRCNotes probable quantities	(as applicable)

(3) Discussion. State the reasons for recommended positions. Identify to appropriate task and/or trips by use of reference notes.

d. Other Direct Costs(ODC)

(1) Basis for Proposal. State the basis on which each proposed ODC cost was proposed.

(2) ODC Breakdown

<u>ODC Item</u>	<u>Proposed Items</u>	<u>GRC Minimum</u>	<u>GRC Objective</u>	<u>Reference</u>
List items or groups of items by task	Record the proposed quantities	GRC minimum quantities	GRC probable quantities	Notes (as applicable)

(3) Discussion. State the reasons for recommended positions. Identify to appropriate task and classification of ODC by use of reference notes.

4. Conclusions

This final paragraph may be titled as appropriate and used to summarize or address other issues not covered elsewhere in the report. It should, however, include a statement, which identifies supplemental supporting data, which is not included with the report and tells the reader where this material is filed. The numeric totals from the detailed technical analysis report should be summarized for the total contract in the Technical Analysis Summary section of the Cost Proposal Technical Analysis Request, NASA Form C-266. The report and the NASA Form C-266 should be signed by the project engineer, and optionally reviewed for adequacy by his supervisor who acknowledges the review by signing below the project engineer's signature.

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5. Note to Technical Analyst

The foregoing format is designed to demonstrate one approach to providing an adequate technical analysis. The importance lies in the content and not in the format. Different contractor accounting and estimating systems necessitate the use of different formats. When repetitive procurement actions are expected to occur with a single contractor, it is strongly suggested that the project engineer work closely with the assigned price analyst in developing a mutually acceptable standardized format for reports on that contractor. On particularly complex proposals, the necessary numeric values can often be best shown by extracting and red-lining appropriate pages from the cost proposal. However, numeric values alone do not provide an adequate technical analysis. A report must still be prepared to comment on

- a. Nonnumeric issues such as the SOW, WBS, schedules, and other features of the procurement
- b. The bases used by the contractor for estimating each element of cost
- c. Also, most important the reasons the project engineer accepted or took exception to the proposed values

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FORM C-266, SEE ATTACHED INFORMED FILLER FILE.